Annual Report of Shellfish Toxicity Monitoring Program 1978

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Fisheries and Oceans Canada
Halifax, N.S. B3J 2S7

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Data Reports

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Numbers 1-25 in this series were issued as Fisheries and Marine Service Data Records by the Pacific Biological Station, Nanaimo, B.C. The series name was changed with report number 26.

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Les numéros 1-25 de cette série ont été publies à titre de Records statistiques, Service des pêches et de la mer, par la Station biologique du Pacifique, Nanaimo (C.-B.). Le nom de la série a été modifie à partir du numero 26.

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SUMMARY OF 1978 SHELLFISH TOXICITY RECORDS

IN THE MARITIME PROVINCES

A. INTRODUCTION

The Paralytic Shellfish Toxicity Monitoring Program for 1978 in the Maritime Provinces was continued in three phases of surveillance.

1. Surveillance of Shellfish Areas
2. Commercial Checks
3. Experimental and Special Samples

In Southern New Brunswick, Class II Shellfish Areas, N.B. #8, N.B.#14, N.B.#15, N.B.#16, together with all Class III areas were closed to the taking of Mya for all purposes at the beginning of the year.

Toxicity scores at certain sampling stations actually decreased as the year progressed and it was not until the 7th of July, 1978, that it was necessary to close Pocologan, N.B.#12, because of increased Paralytic Shellfish Poison in the shellfish. On the 14th of July, 1978, Lepreau Harbour, N.B.#10, was also closed to the taking of clams.

Highs of 2800 ug and 400 ug of toxin per 100 grams of shucked meat were reached at Pocologan and Lepreau Harbour on the 12th of July and the 31st of July, 1978, respectively. At approximately the same time, scores in Mytilus at Lepreau Basin reached 5100 ug of toxin on the 25th of July; 3200 ug in Mya at Crow Harbour on the same date and 3200 ug in Volsella on the 31st of July, 1978, at Ross Island Thoroughfare.

On the 13th of September, 1978, notification of the opening of shellfish areas N.B.#8, N.B.#10, N.B.#12, N.B.#14 (not including Frye Island) and N.B.#16 to the taking of clams for all purposes was received by the laboratory. This now left the Class II area of L'Etete, N.B.#15, closed. This remained so until the end of the year.

Shellfish areas N.B.#15.1 and N.B.#17 were not closed to the taking of shellfish during 1978. On the 20th of December, 1978, word was received that that part of the Class III area, Lepreau Basin, N.B.#9, from the Maces Bay Wharf to Ragget Head, was open to the taking of the shellfish Mya for all purposes.

During 1978, several additional sampling stations were enlisted to supplement those of former years. These included Scotchman's Cove to represent N.B.#14, Bar Road to represent N.B.#15.1, Duck Cove and Stuart Cove to represent N.B.#16 and Northern Harbour to represent N.B.#17.

A surveillance of commercial products, both domestic and imports, was carried out during the year. Assistance was again given to the Biological Station at St. Andrews, N.B., in their continued work with the Scallop Placopecten in this area, and extractions were made of Paralytic Shellfish Poison from the various separated parts of the scallops. These included the gills, gonads, liver, rims and meats or adductor muscles.

While Paralytic Shellfish Poison levels in New Brunswick would be considered on a low plane again in 1978, poisonings occured from clams bought near St. George and from mussels taken at Galley's Beach, Head Harbour, Campobello. Four (4) case histories were prepared and special samples were obtained and extracted to establish levels of Paralytic Shellfish toxins in the various shellfishes concerned.

Details may be found in Part VI of this publication.

In the Eastern Part of the Province of New Brunswick, a surveillance of commercial products was carried out.

In Nova Scotia, all Class I shellfish areas were open to the taking of clams for all purposes at the beginning of the year.

With increases of Paralytic Shellfish Poison in certain localized areas, a partial closure of the Annapolis N.S.#18 was put into effect on the 6th of June, 1978, at which time the area west of a straight line drawn from the Lighthouse at Victoria Beach to Bear River was placed under quarantine. This area was re-opened on the 16th of June, 1978, when the toxicity scores returned to safe acceptable levels, below the Class limit.

On the 18th day of July, 1978, another partial closure of Annapolis N.S.#18 was placed into effect. This was recinded on the 22nd of August, 1978, after the toxin decreased to a safe level.

Centreville, the key station for Nova Scotia, had a maximum score of 1400 ug of toxin in the shellfish Volsella on the 17th of January, 1978, while Mytilus reached 1400 ug of toxin at Margaretsville on the 25th of July, 1978 and Mya reached 410 ug of toxin at Joggins on the 25th of July, 1978.

The Paralytic Shellfish Poison level attained in shellfishes of Nova Scotia would be considered low and no known poisonings were recorded during 1978.

The weather pattern for the Maritime Provinces during the year would be considered approximately normal. There was, however, a significant decline in the air temperatures in New Brunswick during the mid-spring period.

This "Annual Report of Shellfish Toxicity Monitoring Program, 1978" is the thirty-seventh (37th) in the series of annual summaries, observation, case histories, and changes, etc., during the year.

B. WORK SHARING

The Department of Fisheries and Oceans, Field Services Branch, Inspection Division, is indebted to:

Microbiology Division,
Research Laboratories, H.P.B.,
Dept. National Health & Welfare,
OTTAWA, Ontario K1A OL2

who carried out bioassays on the extracts prepared and forwarded to them by various Fish Inspection Laboratories of the Maritime Region.

As in the past, the Department of National Health & Welfare also acted as consultants on matters pertaining to the closings and openings of the various shellfish areas and to the control agencies on problems relating to shellfish toxicity in general.

The various kinds of samples that were submitted for bioassays by the Fish Inspection Laboratories of the Maritime Provinces were supplied by the following Divisions of the Department of Fisheries and Oceans:

Conservation and Protection

Field Staff Inspection Division

Fish Inspection Laboratories
Inspection Division

C. FEATURES OF 1978

1. Management and Surveillance of the Bay of Fundy Paralytic Shellfish Poison Program.

Scheme of Control - The scheme for handling the Bay of Fundy Paralytic Shellfish Poison Problem was followed during 1978. This program of surveillance kept the Department informed of the presence and levels of Paralytic Shellfish Poison at the different shellfish areas throughout the year.

In order to inform the public quickly of any dangerous situations, press releases were prepared in advance and up-dated at the times of release. The various sections of the news media played a very much improved role, as they have in former years, and good coverage was provided by press, radio, and television.

Several sampling schedules were issued to the Conservation and Protection Division at St. Andrews, N.B., to control samplings in the Southern New Brunswick areas. A similiar role was played by the Inspection Division at Halifax for Nova Scotia, to obtain the information required for the management of the scheme.

New Conversion Factor - After the 7th of April, 1978, all values of Paralytic Shellfish Poison will be based on the Conversion Factor (C.F.) of 0.15. This is due to a new strain of Swiss Webster White Mice which have been developed and is now being bred by National Health and Welfare, Ottawa. It may be noted that male mice are presently being utilized in this work.

Ministerial Orders in New Brunswick:-

Class I areas of New Brunswick were open to the taking of clams at the beginning of the year. The Class II shellfish areas of N.B. #8, N.B.#14, N.B.#15, N.B.#16, together with all Class III shellfish areas were closed to the taking of clams for all purposes.

This was not a significant year for high toxicity scores and probably the most significant part was the presence of toxin above 1,000 ug of toxin in the shellfish Volsella at Ross Island Thoroughfare at the beginning of the year.

After a sharp increase in toxicity scores, word was received on the 7th of July, 1978, that Pocologan, N.B.#12, was closed to the taking of clams for all purposes. On the 14th of July, 1978, a similiar closure was deemed necessary for Lepreau Harbour, N.B.#10.

Toxicity scores decreased as the summer progressed and on the 13th of September, 1978, word was received that shellfishing areas N.B.#8, N.B.#10, N.B.#14 (but not including Frye Island), and N.B.#16, were open to the taking of clams for all purposes.

As scores decreased with the coming of cooler weather, that part of Lepreau Basin, N.B.#9, from the wharf at Maces Bay to Ragget Head, was opened to the taking of Mya for all purposes.

Shellfish areas N.B.#15 and all Class III shellfish areas except that part of N.B.#9, from the wharf at Maces Bay to Ragget Head, were closed for the remainder of the year.

Ministerial Orders of Nova Scotia - In Nova Scotia, all Class I Shellfish Areas were open to the taking of clams for all purposes at the beginning of the year. On the 6th of June, 1978, word was received of a partial closure of Annapolis N.S.#18 Shellfish Area to the taking of clams following an increase in the toxin level in this shellfish. This partial closure included the Digby County area of the Annapolis Basin west of a line drawn from the Lighthouse at Victoria Beach to Bear River. The Annapolis County area of the Annapolis Basin east of this line remained opened because of negligible levels.

On the 16th of June, 1978, word was received that reopened the above partial closure of Annapolis N.S.#18 to the taking of clams for all purposes due to a decrease in the toxin level of this area.

On the 18th of July, 1978, word was received of another partial closure of Annapolis N.S.#18 Shellfish Area due to dangerous levels of toxin. The area affected included that part of Annapolis Basin west of a line drawn from the jetty at the Cornwallis Naval Station, Cornwallis, N.S., to the light on the Government Wharf at Port Wade, N. S.

On the 22nd of August, 1978, the above partial closure of 18 July, 1978, was recinded when toxin levels decreased to safe levels for clam harvesting.

SAMPLING STATIONS OF NEW BRUNSWICK

SOUTHERN NEW BRUNSWICK:-

The Southern section of New Brunswick is serviced by the Fish Inspection Laboratory at Black's Harbour, N.B.

The surveillance of the shellfish areas of this District was carried out by the sampling of two (2) Key and seven (7) regular sampling stations. During the year, four (4) auxiliary sampling stations were enlisted to assist management in the control program.

Lepreau Basin, N.B.#9 and Crow Harbour, N.B.#12, our two (2) key stations, were sampled throughout the year, as was Ross Island Thoroughfare, N.B.#18, a Class III station.

Lepreau Harbour and Pocologan, representing N.B.#10 and N.B.#12, were sampled from the 12th of June to the 5th of September, 1978.

In N.B.#14, Scotchman's Cove and Sam Craig's Cove were sampled from the 4th of January to the 5th of September, 1978, and on the 4th of January to the 22nd of February, 1978, respectively.

In N.B.#15, L'Etete was sampled from the 4th of January to the 30th of October, 1978.

In N.B.#15.1, Bar Road and McCann Cove were sampled from the 24th of April to the 5th of September, 1978, and on the 24th of April, 1978, respectively.

In N.B.#16, Duck Cove and Stuart's Cove were sampled from the 17th of January to the 25th of September, 1978, and from the 5th of June to the 6th of September, 1978, respectively.

In N.B.#17, Northern Harbour was sampled from the 5th of June to the 6th of September, 1978.

The shellfish Mya was employed at Lepreau Basin, Lepreau Harbour, Crow Harbour, Pocologan, Scotchman's Cove, Stuart Cove, L'Etete, Bar Road, Northern Harbour, Duck Cove, Ross Island Thoroughfare and other miscellaneous sampling stations. Mytilus and Volsella were employed also at Lepreau Basin and Ross Island Thoroughfare respectively.

The toxicity scores in the shellfish Mya were above the Class II limit at Scotchman's Cove and L'Etete and above the Class III limit in Volsella at Ross Island Thoroughfare at the beginning of the year. There was a general decline in the toxicity as the year progressed at these stations.

On the 15th of May, a pronounced temporary increase was recorded at Crow Harbour when scores went from 62 to 490 ug of toxin. On the 27th of June, a score of 500 ug was recorded in Mytilus at Lepreau Basin and increases followed at most other sampling stations between the first and second week of July, 1978.

During the year, a grand total of two hundred and eighty-two (282) samples of various shellfishes were extracted for toxin in the Paralytic Shellfish Poisoning Surveillance Program. There were one hundred and twenty-five (125) from Class II areas and one hundred and fifty-seven (157) from Class III areas.

Class II shellfish areas had one hundred and two (102) or eighty one and six tenths (81.6) percent of these samples toxic while sixty-two (62) or forty-nine and six tenths (49.6) percent above the class limit.

Class III shellfish areas had one hundred and fifty-two (152) or approximately ninety-seven (97) percent toxic, of these seventy-four (74) or nearly forty-seven (47) percent were above the class limit.

The Maxima scores reached in the various species of shellfishes sampled in the Paralytic Shellfish Poisoning surveillance program at our regular sampling stations were as follows:

Date Taken	Species	Location	Score of Toxin per 100 grams
July 25	Mytilus	Lepreau Basin	5100 ug
July 25	Mya	Crow Harbour	3200 ug
July 31	Volsella	Ross Island Thoroughfare	3200 ug

The complete list of the toxicity scores for the various shellfishes taken at the regular sampling stations of Southern New Brunswick may be found in Part II of this report.

EASTERN NEW BRUNSWICK:-

The Eastern section of New Brunswick is serviced by the Fish Inspection Laboratory at Shediac, N.B.

The surveillance of the shellfish growing areas of this district was not carried out since the presence of the dinoflagellate Gonyaulax tamarensis has never been established in the Northumberland Strait waters of the Gulf of St. Lawrence.

NORTHERN NEW BRUNSWICK:-

The Northern section of New Brunswick is serviced by the Fish Inspection Laboratory at Shippegan, N.B.

Regular shellfish sampling stations have not been established in this district since the presence of the causitive agent of Paralytic Shellfish Poison has not been confirmed.

The Bay of Fundy is permanently closed to the harvesting of mussels in New Brunswick and Nova Scotia, except by special permit. This can be issued by the Department when Paralytic Shellfish Poison and pollution, etc., are at satisfactory low levels.

SAMPLING STATIONS OF NOVA SCOTIA

CENTRAL NOVA SCOTIA:-

The Central section of Nova Scotia is serviced by the Fish Inspection Laboratory at Halifax, Nova Scotia.

A total of nine (9) samples were extracted from the shellfish Mya, which were taken from three (3) sampling stations, Economy, Five Islands and Kerr's Brook. All samples were found to have scores of less than 30 ug of toxin per 100 grams. Five Islands was sampled between the 5th of June, 1978 and the 26th of September, 1978.

WESTERN NOVA SCOTIA:-

The Western section of Nova Scotia is serviced by the Fish Inspection Laboratory at Yarmouth, Nova Scotia.

Monitoring of the various shellfish areas was carried out at the Key Station, Centreville, and at seven (7) regular and five (5) miscellaneous sampling stations.

In N.S.#16, Belliveau's Cove and Meteghan were used to spot check local levels of Paralytic Shellfish Poison.

In N.S.#17, Centreville, the Key Station, was sampled throughout the year.

In N.S.#18, Joggins was sampled from the 5th of April to the 21st of November, 1978; Smith's Cove from the 27th of June to the 22nd of August, 1978; Deep Brook from the 27th of April to the 22nd of August, 1978; Clementsport, Upper Clements and Port Wade from the 27th of April to the 24th of October, 1978.

In N.S.#19, Margaretsville was sampled from the 27th of April to the 3rd of October, 1978.

Miscellaneous samplings were carried out at various sampling stations at different times of the summer.

The shellfish Volsella (Modiolus) was employed at Centreville, Mytilus at Margaretsville and Meteghan, and Mya at the remaining sampling stations.

At the beginning of the year, toxicity scores at Centreville were in the low one thousand range, these were carried over from the fall and early winter of 1977 when scores increased at this location. They began to diminish by mid-March and continued to decline until July, when increases were again experienced. Scores were dominately above the class limit for the remainder of the year.

On the 30th of May, 1978, the class limit was exceeded at Joggins, N.S.#18, which prompted a closure of this area between the 6th and the 16th of June, 1978.

After the first week of July, scores began to increase at Joggins, Smith's Cove, Deep Brook and Margaretsville. These gradually declined and most sampling stations were at satisfactory low levels by the 1st week of August.

Scores at Belliveau Cove, Meteghan, Annapolis Basin, Clementsport, Upper Clements and Port Wade were very low or were not registered during 1978.

The Maxima scores were not high at our regular sampling stations during the year and a score of only 1400 ug of toxin in Volsella was reached on the 17th of January at Centreville, during the summer a high of 1300 ug of toxin was realized on the 25th of July, 1978, at this same station.

In Mya, a high of 410 ug of toxin was reached on the 25th of July at Joggins, N.S.#18, while a high of 1400 ug was realized in

Mytilus at Margaretsville on the 25th of July, 1978.

In Nova Scotia, a grand total of two hundred and forty-nine (249) samples were extracted for assessment in our surveillance program. One hundred and ninety-six (196) of these represented shellstock from Class I areas, of these, fifty-eight (58) or twenty-nine and one half (29.5) percent were found to contain toxin while twenty-one (21) or ten and seven- tenths (10.7) percent exceeded the class limit.

Fifty-three (53) samples represented shellstock from Class III areas, of these forty-one (41) or seventy-seven and three tenths (77.3) percent were found toxic while thirty-five (35) or sixty-six (66) percent were found above the class limit.

The complete lists of toxicity scores in the various shellfishes taken at the different sampling stations in Nova Scotia may be found in Part III of this report.

2. Special Samples for Surveillance and Investigation:-

During the year, special samples were submitted to the Black's Harbour, Halifax, and Yarmouth Fish Inspection Laboratories in order to assist management in assessing levels of toxicity in certain areas for commercial exploitation. Other samples were submitted for investigational work in seeking answers to this complex problem of Paralytic Shellfish Poison in shellfish.

Further details pertaining to the samples, date of harvesting, and toxicity scores, etc., for the Provinces of New Brunswick and Nova Scotia may be found in Part IV of this report.

3. Commercial Samples:-

Four (4) Fish Inspection Laboratories of the Maritime Provinces which included Black's Harbour, Shediac, Halifax and Yarmouth, carried out representative samplings of commercial products for Paralytic Shellfish Poison extractions in our work to protect the public.

These included the following; Clam Shellstock, Clam Meats, Sliced Clams, Scallop Meats and Roe, Mussels and Welks. It may be noted that Imports included Sliced Clams and Clam Meats.

3. Commercial Samples (cont'd)

A total of ninety-three (93) samples were extracted during this surveillance as follows:

LABORATORY	# OF SAMPLES
Black's Harbour	47
Halifax	14
Shediac	20
Yarmouth	12
Total	93 samples

For further details on the Commercial Products examined, please see Part V of this report.

4. Special Chemical and Experimental Work:-

The Special Chemical and Experimental Work carried out from 1975 to 1977 was temporarily discontinued during 1978 on the various toxins found in the dinoflagellate Gonyaulax tamarensis (excavata), the causitive agent of Paralytic Shellfish Poison.

New work and techniques of other workers are being followed at the present time and it is hoped that within a short period, reliable Chemical assay methods will be developed that can be incorporated into routine laboratory work in this most important field.

5. Paralytic Shellfish Poisonings:-

The toxicity scores in shellfish in the Maritimes during the year would be considered only moderate, yet, poisonings were experienced in New Brunswick from sources not normally dominant in our record files.

A total of four (4) poisonings were reported to the Department and case histories were prepared on each. It may be noted that in the first poisoning, the clams were acquired from a commercial outlet, while the remainder of the cases were the results of eating large mussels (Mytilus) taken at extremely low tides at Galley's Beach, Head Harbour, Campobello Island, N.B. and eaten for the first time by the individuals concerned. Inquiries were made from the local residents who informed them that the mussels were satisfactory for eating. A duplication of the original harvesting could not be made because of great change in the tidal conditions at this time of the year at this location.

For detailed information pertaining to the individual case histories prepared on the four (4) persons subjected to Paralytic Shellfish Poison toxins, please see Part VI of this report.

6. Summary of Toxicity Data:

(a) The number of samples extracted by the various Fish Inspection Laboratories for Paralytic Shellfish Poison in the Maritime Region for bioassays, were as follows:

	Black's Harbour	Shediac	Halifax	Yarmouth
Surveillance	282		9	240
Special Surveillance	118		18	75
Commercial	47	20	14	12
	447	20	41	327

GRAND TOTAL OF CHEMICAL EXTRACTIONS FOR BIOASSAYS 835 Samples

6. (b) Tables I and II show comparisons of the years 1977 and 1978 for New Brunswick and Nova Scotia respectively.

These include the following:

(1) The sampling stations, the kind of shellstock extracted from each station and the number of samples involved.

(2) The number of samples found to be toxic.

(3) The number of samples exceeding their respective class limits.

7. Maps and Locations of the Sampling Stations in the Maritime Provinces:

Maps show the various locations of the regular sampling stations of New Brunswick and Nova Scotia, together with the locations of miscellaneous sampling stations that have been incorporated into the Surveillance Scheme during 1978 for easy reference.

Please see pages 22 and 23 of this report.

TABLE I SUMMARY OF SOUTHERN NEW BRUNSWICK TOXICITY DATA FOR YEAR 1977 AND 1978

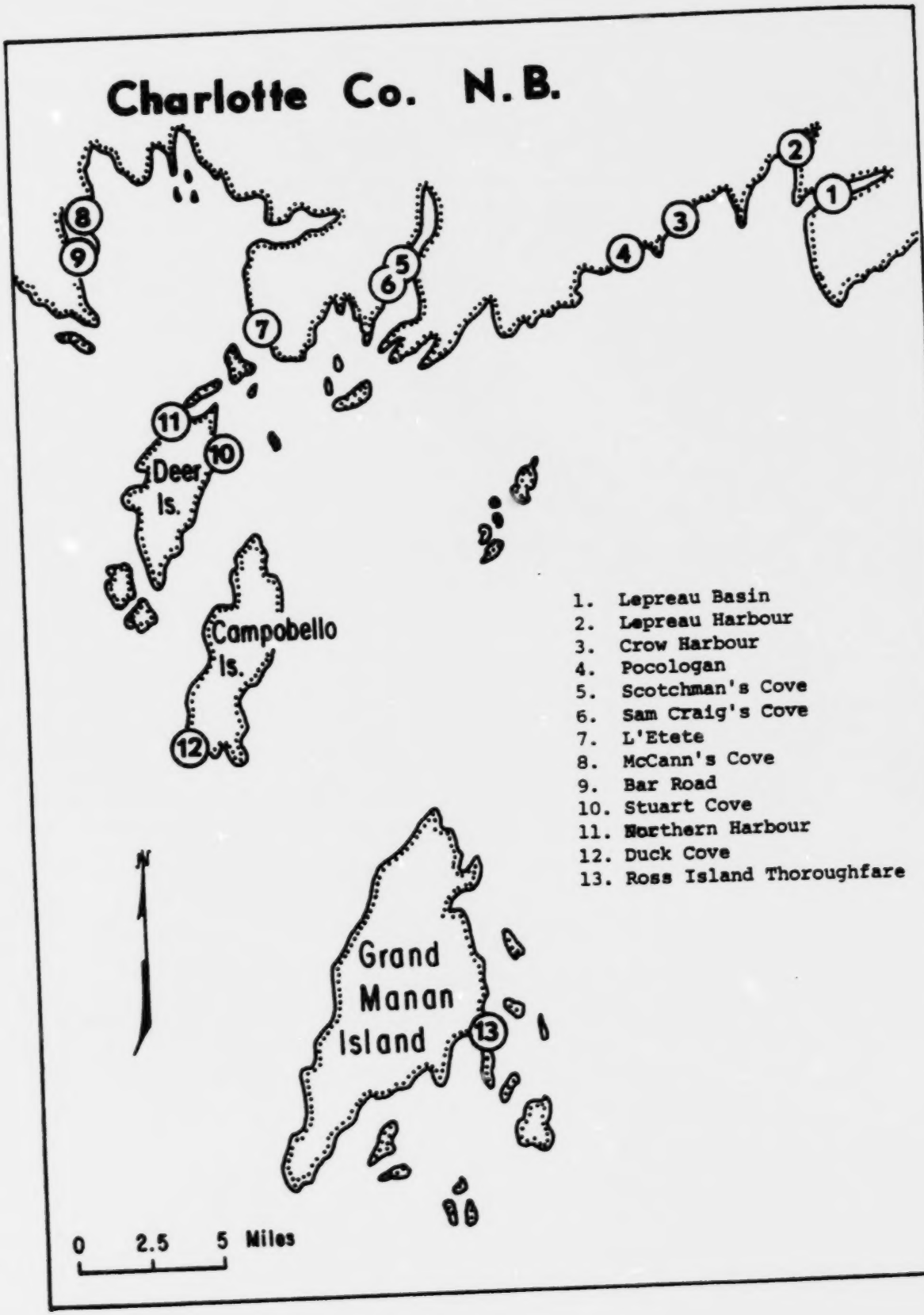
SAMPLING STATION	# OF SAMPLES EXTRACTED		# OF TOXIC SAMPLES		# OF SAMPLES OVER THE CLASS LIMIT	
	1977	1978	1977	1978	1977	1978
CLASS II Class Limit 80 ug.						
Lepreau Harbour (Mya)	20	12	11	9	3	5
Pocologan (Mya)	21	12	13	11	3	7
L'Etete (Mya)	26	27	25	24	18	22
Bar Road (Mya)	22	15	4	7	0	0
Duck Cove (Mya)	25	18	23	18	9	6
McCann Cove (Mya)	22	1	12	1	0	0
Northern Harbour (Mya)	30	12	8	5	2	0
Sam Craig's Cove (Mya)	20	3	20	3	13	3
Scotchman's Cove (Mya)	19	12	19	11	12	7
Stuart Cove (Mya)	33	13	22	13	5	12
Totals:	238	125	157 65.97%	102 81.6%	65 27.33%	62 49.6%
CLASS III Class Limit 160 ug.						
Crow Harbour (Mya)	41	29	41	25	28	14
Lepreau Basin (Mya)	33	29	33	29	12	8
Lepreau Basin (Mytilus)	29	21	25	21	7	9
Ross Island Thoroughfare (Mya)	43	39	40	38	7	8
Ross Island Thoroughfare (Volsella)	43	39	41	39	14	35
Totals:	189	157	180 95.2%	152 96.84%	68 35.98%	74 46.84%
GRAND TOTALS OF CLASS II AND III AREAS	427	282	337 78.92%	254 90.10%	133 31.14%	136 48.06%

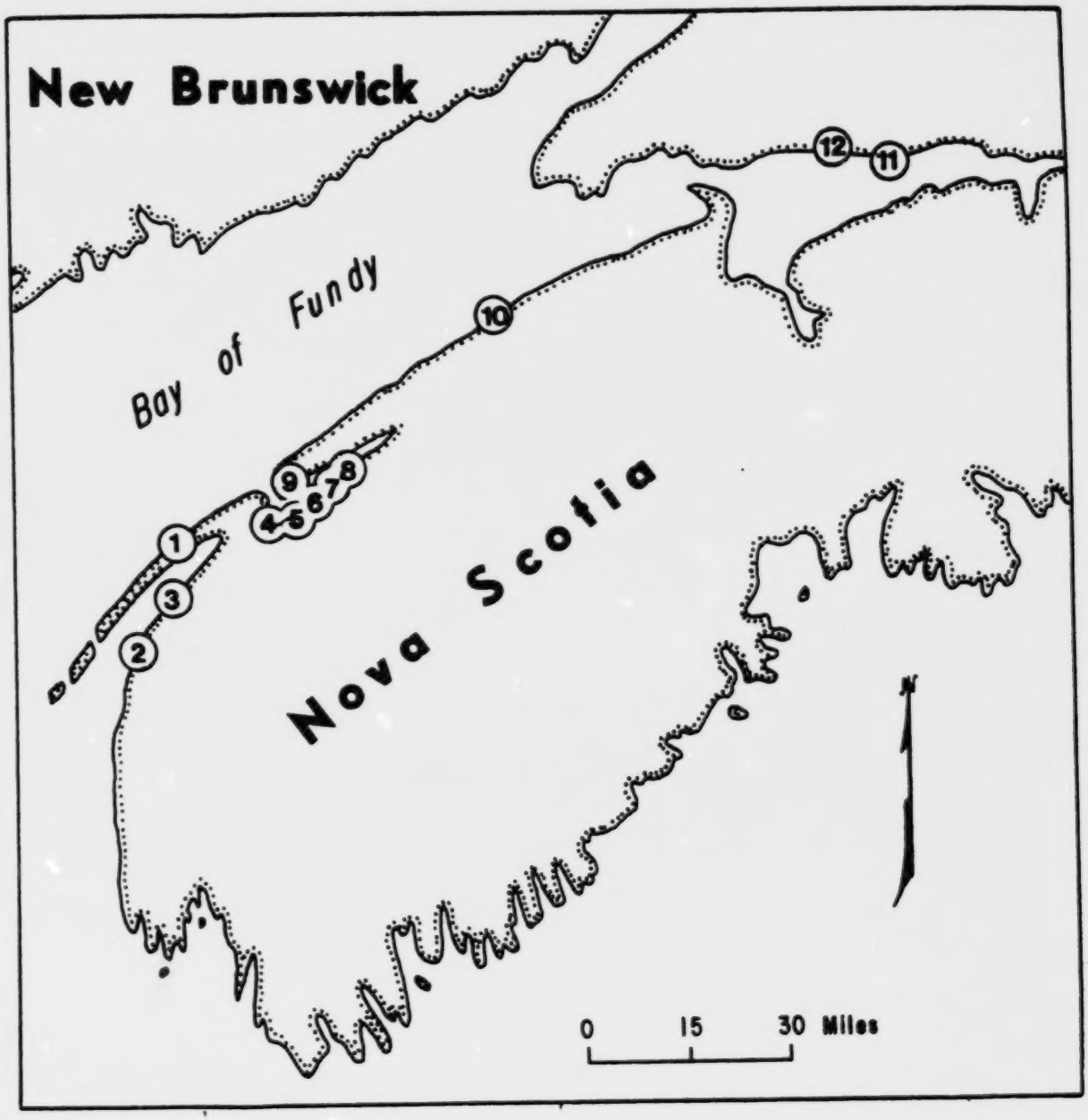
TABLE II SUMMARY OF NOVA SCOTIA TOXICITY DATA FOR YEARS 1977 AND 1978

78.92% 90.10% 31.14% 46.00%

TABLE II SUMMARY OF NOVA SCOTIA TOXICITY DATA FOR YEARS 1977 AND 1978

SAMPLING STATION	# OF SAMPLES EXTRACTED		# OF TOXIC SAMPLES		# OF SAMPLES OVER THE CLASS LIMIT	
	1977	1978	1977	1978	1977	1978
CLASS I AREAS Class Limit 80 ug						
Belliveau Cove (Mya)	7	1	0	0	0	0
Meteghan (Mytilus)	0	2	-	0	-	0
Meteghan (Mya)	-	1	-	0	-	0
Annapolis Basin (Mya)	-	2	-	0	-	0
Clementsport (Mya)	26	25	1	2	0	0
Deep Brook (Mya)	26	37	17	19	2	9
Digby (Mya)	-	2	-	0	0	0
Economy (Mya)	2	1	0	0	0	0
Five Islands (Mya)	3	7	0	0	0	0
Joggins (Mya)	33	51	30	27	6	6
Port Wade (Mya)	26	26	2	0	0	0
Smith's Cove (Mya)	-	16	-	10	-	6
Upper Clements (Mya)	28	24	1	0	0	0
Kerr's Brook (Mya)	-	1	-	0	-	0
Miscellaneous	13	-	3	-	1	-
Totals	164	196	54 33.0%	58 29.50%	9 5.4%	21 10.71%
CLASS III AREAS Class Limit 160 ug						
Centreville (Volsella)	49	35	49	35	16	32
Centreville (Mytilus)	4	-	4	-	2	-
Margaretsville (Mytilus)	17	18	16	6	7	3
Totals	70	53	69 98.6%	41 77.3%	25 35.7%	35 66.03%
GRAND TOTALS OF CLASS I AND CLASS III AREAS	234	249	123 52.5%	99 39.75%	34 14.5%	56 22.49%


Charlotte Co. N.B.
Deer Is.
Campobello Is.
Grand Manan Island
N
0 2.5 5 Miles
1. Lepreau Basin
2. Lepreau Harbour
3. Crow Harbour
4. Pocologan
5. Scotchman's Cove
6. Sam Craig's Cove
7. L'Etete
8. McCann's Cove
9. Bar Road
10. Stuart Cove
11. Northern Harbour
12. Duck Cove
13. Ross Island Thoroughfare



1. Centreville
2. Meteghan
3. Belliveau's Cove
4. Joggins
5. Smith's Cove
6. Deep Brook
7. Clementsport
8. Upper Clements
9. Port Wade
10. Margaretsville
11. Economy
12. Five Islands

P A R T II

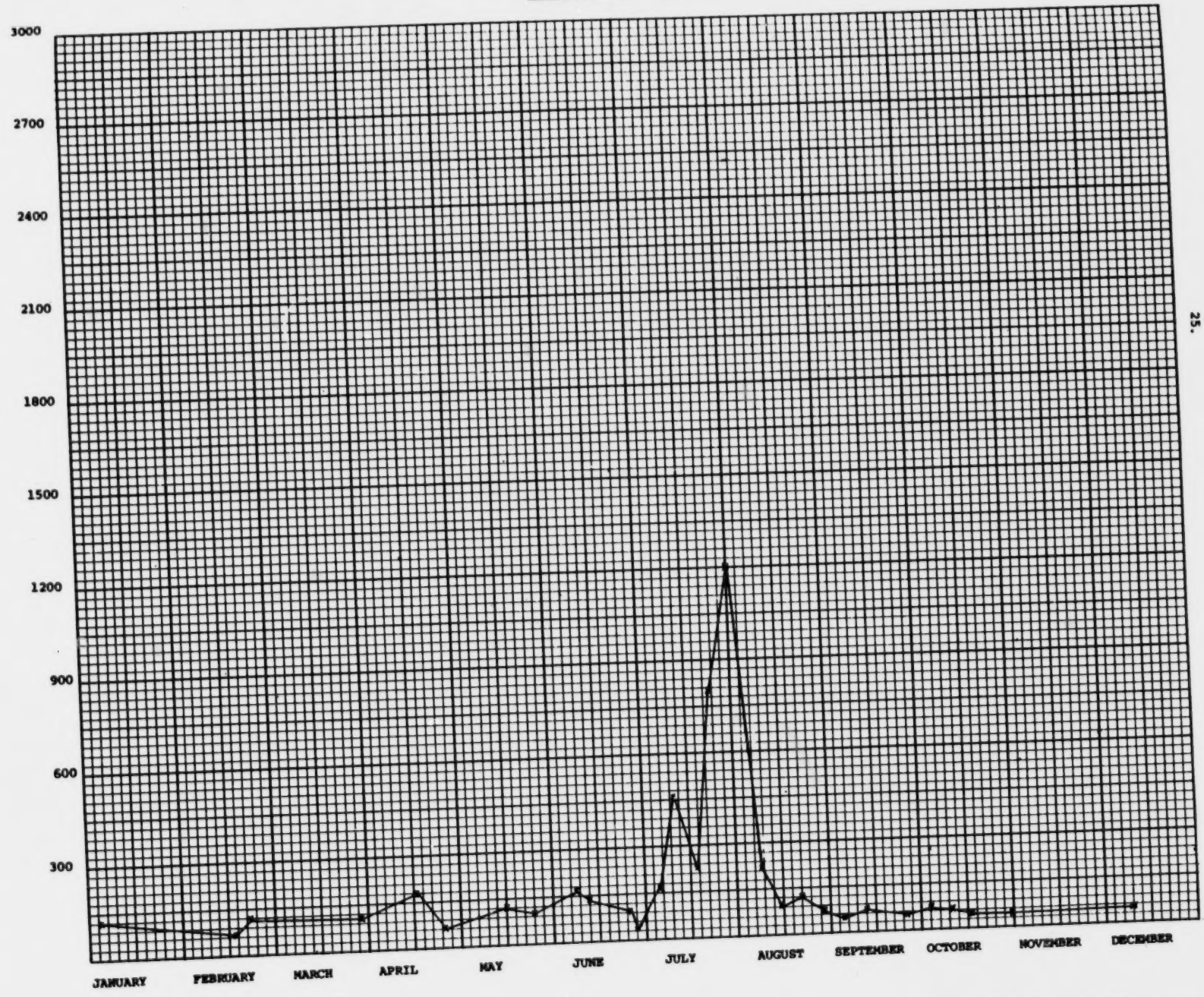
SOUTHERN NEW BRUNSWICK

RECORDS ARRANGED BY AREAS AND SPECIES

LEPREAU BASIN - Mya

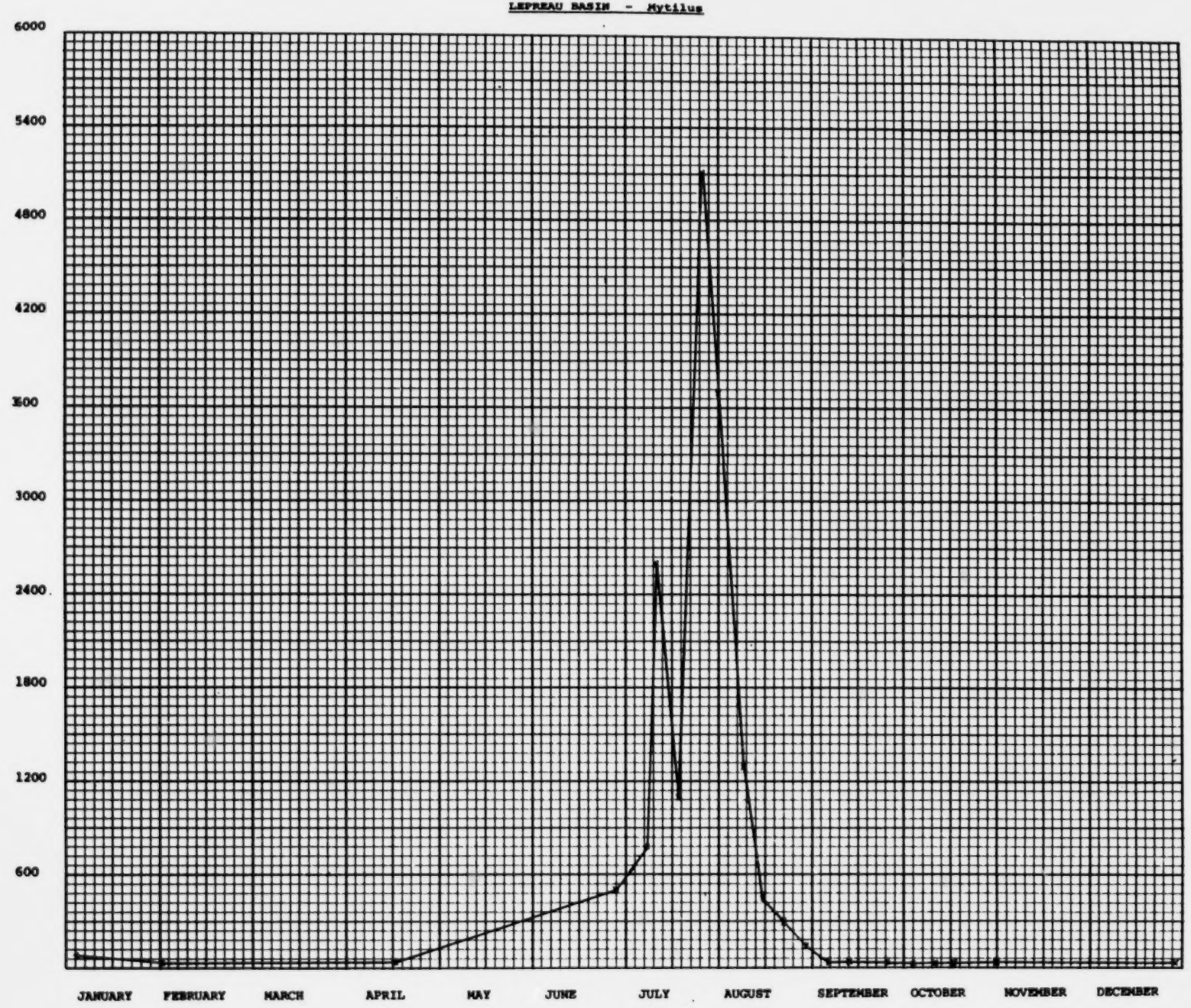
Date Taken 1978	Toxicity in Micrograms
January 4	120
February 1	69
February 22	120
March 28	110
April 16	180
April 25	65
May 15	120
May 24	100
June 8	170
June 12	140
June 19	68
June 27	32
July 5	170
July 10	460
July 17	230
July 25	800
July 31	1200
August 8	220
August 14	110
August 21	120
August 28	75
September 5	57
September 12	75
September 25	54
October 3	73
October 10	61
October 16	54
October 30	56
December 9	55

LEPREAU BASIN - Mya



LEPREAU BASIN - Mytilus

Date Taken 1978	Toxicity in Micrograms
January 4	63
February 1	48
April 16	48
June 27	500
July 5	780
July 10	2600
July 17	1100
July 25	5100
July 31	3700
August 8	1300
August 14	450
August 21	300
August 28	140
September 5	47
September 12	51
September 25	35
October 3	32
October 10	35
October 16	37
October 30	37
December 28	30

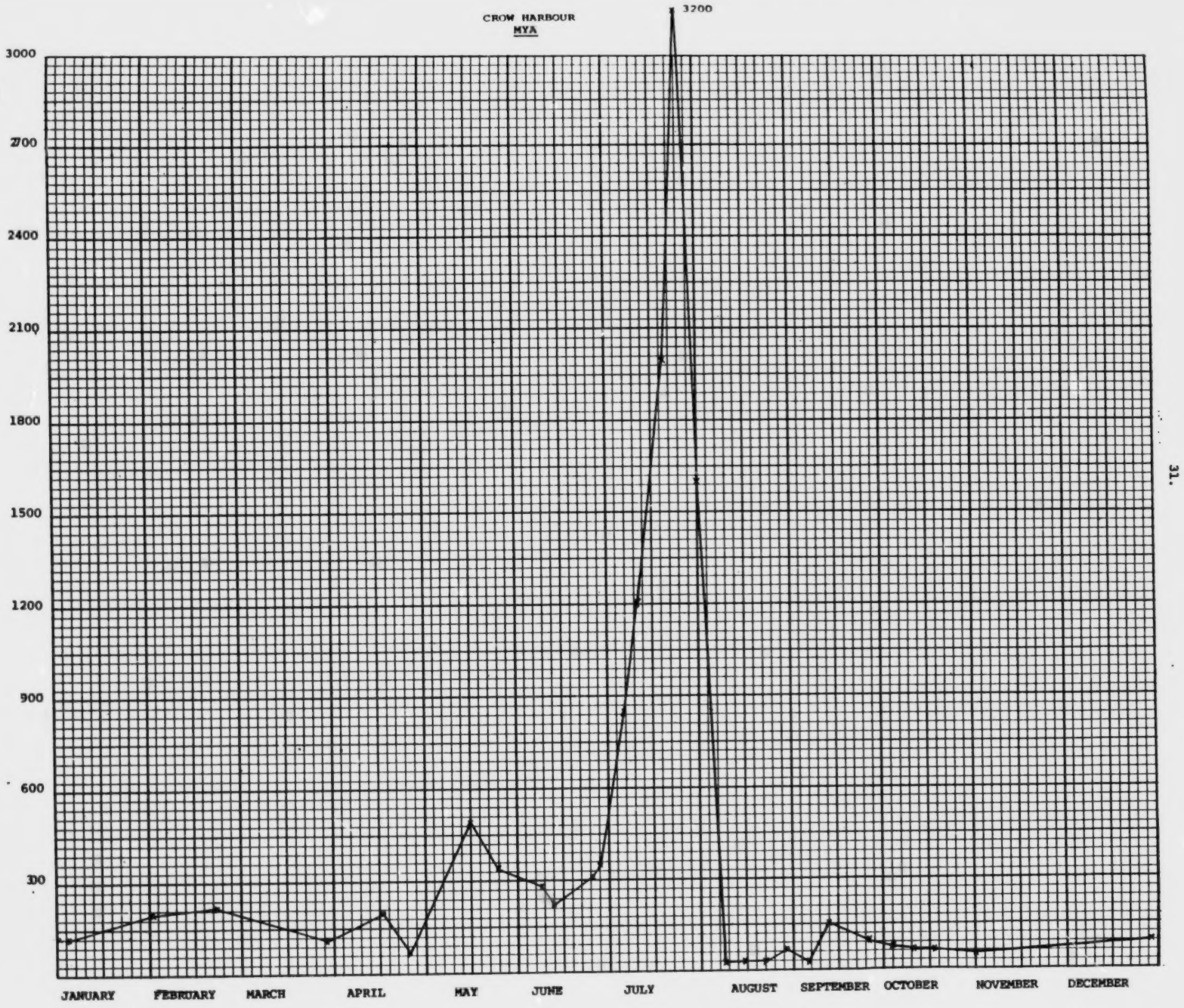

LEPREAU BASIN - Mytilus
6000
5400
4800
4200
3600
3000
2400
1800
1200
600
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

LEPREAU HARBOUR - Mya

Date Taken 1978	Toxicity in Micrograms
June 12	46
June 19	63
June 27	31
July 9	160
July 17	32
July 25	150
July 31	400
August 8	230
August 14	130
August 20	<30
August 28	<30
September 5	<30

CROW HARBOUR - Mya

Date Taken 1978	Toxicity in Micrograms
January 4	120
February 1	200
February 22	220
March 28	110
April 16	200
April 25	62
May 15	490
May 24	340
June 8	280
June 12	250
June 19	310
June 27	350
July 5	850
July 10	1200
July 17	2000
July 25	3200
July 31	1600
August 8	<30
August 14	<30
August 21	<30
August 28	64
September 5	<30
September 12	150
September 25	94
October 3	78
October 10	66
October 16	62
October 30	53
December 28	90


CROW HARBOUR
MYA
3200
3000
2700
2400
2100
1800
1500
1200
900
600
300
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

POCOLOGAN - Mya

Date Taken 1978	Toxicity in Micrograms
June 12	<30
June 19	44
June 27	87
July 12	2800
July 17	520
July 25	650
July 31	360
August 8	170
August 14	100
August 21	63
August 28	66
September 5	57

SAM CRAIG'S COVE - Mya

Date Taken 1978	Toxicity in Micrograms
January 4	250
February 1	180
February 22	150

SCOTCHMAN'S COVE - Mya

Date Taken 1978	Toxicity in Micrograms
January 4	260
February 22	160
May 29	380
June 12	210
June 19	55
June 26	130
July 5	130
July 9	450
August 8	70
August 20	57
August 27	<30
September 5	56

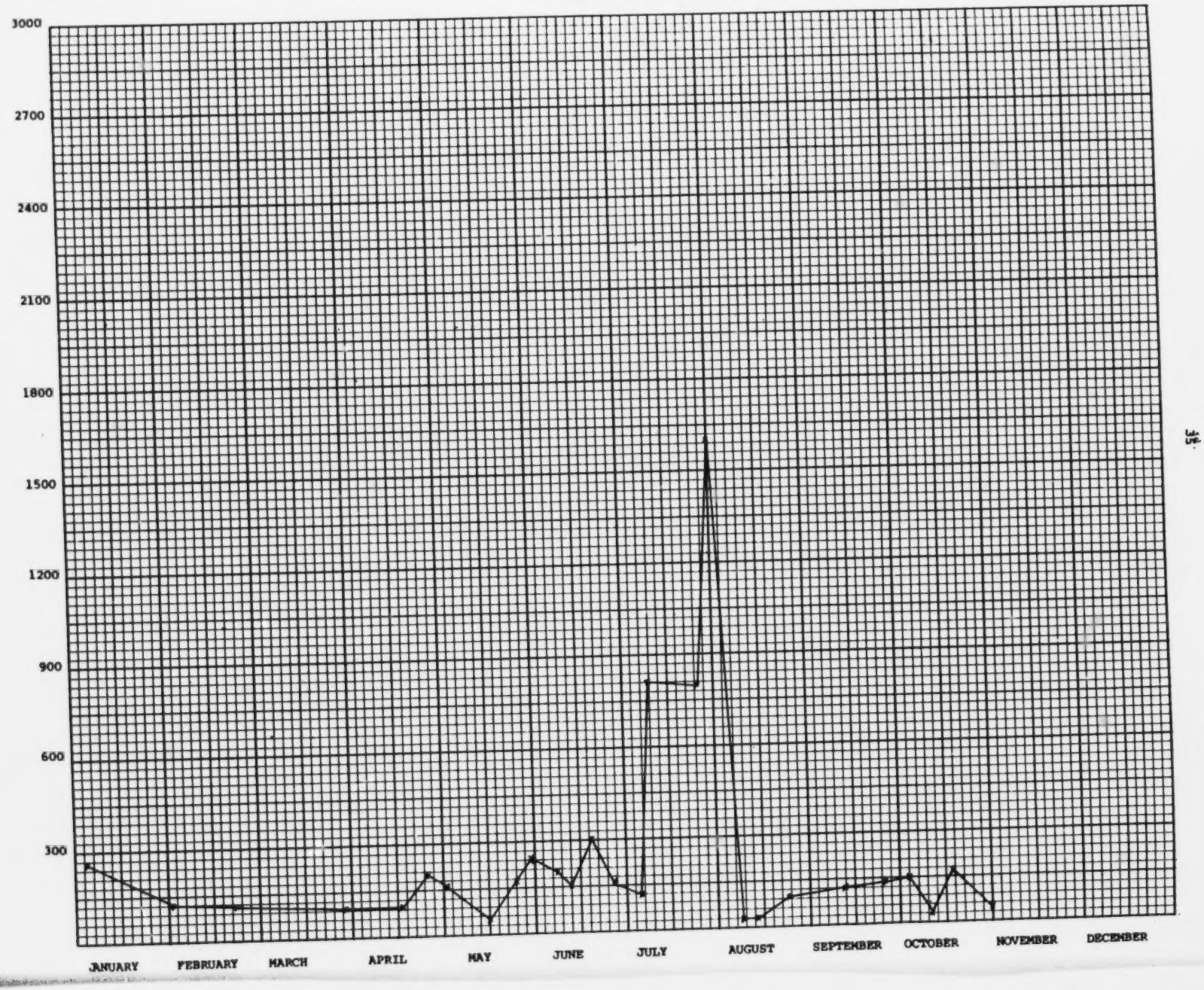
STUART COVE - Mya

Date Taken 1978	Toxicity in Micrograms
June 5	93
June 12	92
June 20	110
June 27	140
July 5	110
July 10	170
July 18	590
July 25	770
August 1	500
August 10	250
August 15	160
August 22	140
September 6	71

L'ETETE - Mya

Date Taken 1978	Toxicity in Micrograms
January 4	260
February 1	120
February 22	110
March 28	95
April 16	100
April 25	200
May 1	160
May 15	47
May 24	170
May 29	240
June 8	200
June 19	300
June 12	150
June 26	160
July 5	120
July 9	810
July 25	800
July 31	1600
August 8	<30
August 13	<30
August 20	30
September 25	140
October 3	150
October 10	<30
October 17	170
October 30	54

L'ETETE - Mya


3000
2700
2400
2100
1800
1500
1200
900
600
300
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

McCANN COVE - Mya

Date Taken 1978	Toxicity in Micrograms
April 24	31

BAR ROAD - Mya

Date Taken 1978	Toxicity in Micrograms
April 24	<30
June 6	48
June 12	62
June 19	47
June 26	44
July 4	33
July 10	<30
July 17	<30
July 24	<30
August 1	30
August 9	<30
August 14	<30
August 21	30
August 28	<30
September 5	<30

DUCK COVE - Mya

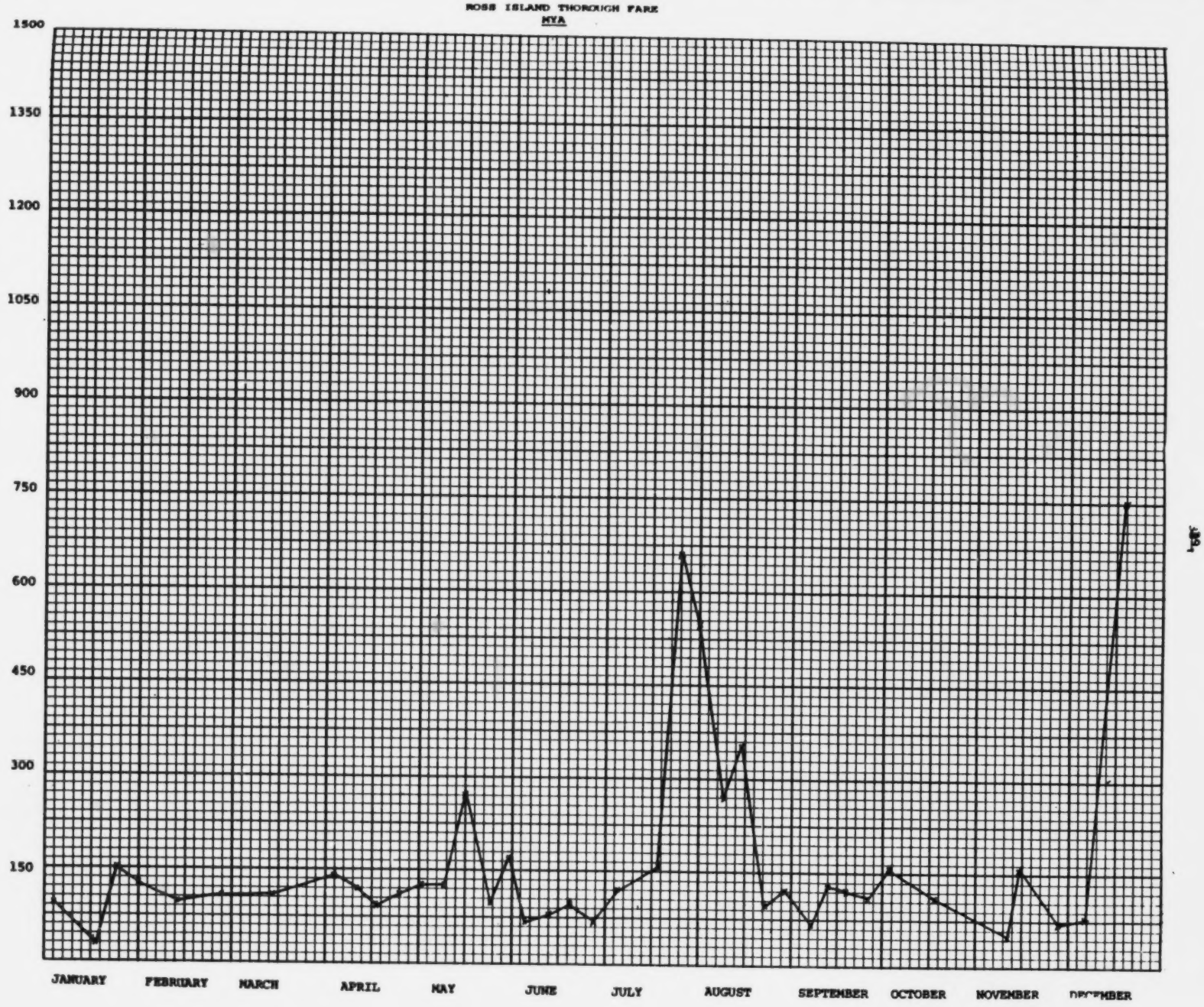
Date Taken 1978	Toxicity in Micrograms
January 17	55
January 24	47
February 1	65
February 18	53
June 5	70
June 12	50
June 26	65
July 4	98
July 10	84
July 17	110
July 24	450
July 31	530
August 8	120
August 14	69
August 21	85
August 28	64
September 5	44
September 25	75

NORTHERN HARBOUR - Mya

Date Taken 1978	Toxicity in Micrograms
June 5	39
June 12	38
June 20	<30
June 27	32
July 5	<30
July 10	<30
July 18	<30
July 25	68
August 10	<30
August 15	31
August 22	<30
September 6	<30

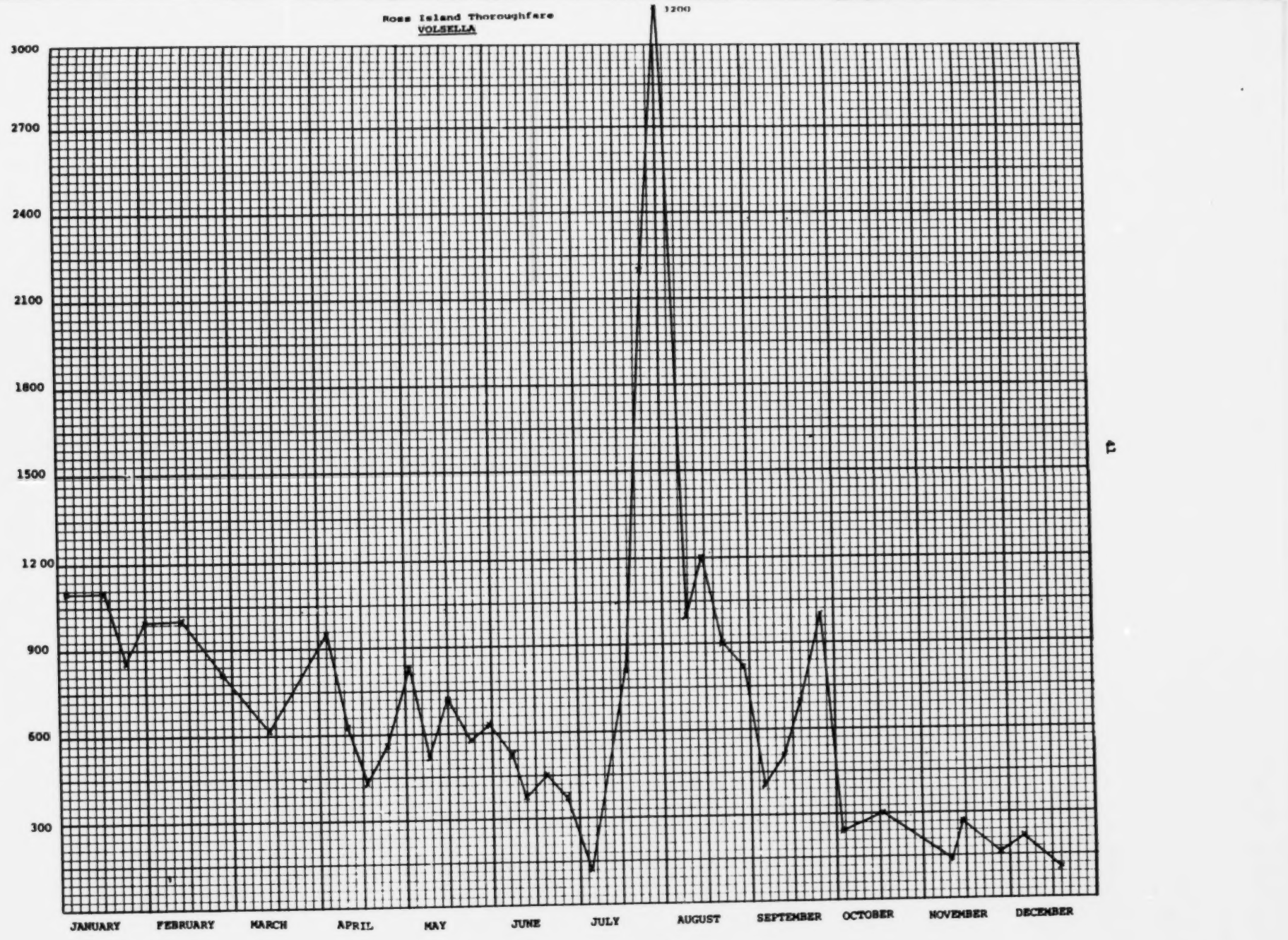
ROSS ISLAND THOROUGHFARE - Mya

Date Taken 1978	Toxicity in Micrograms
January 3	96
January 16	34
January 23	150
January 30	130
February 13	100
February 27	110
March 13	110
April 3	140
April 10	120
April 16	94
April 24	110
May 1	130
May 8	130
May 15	270
May 23	100
May 29	170
June 5	70
June 12	80
June 19	100
June 26	74
July 4	120
July 17	160
July 24	660
July 31	550
August 8	270
August 14	350
August 21	98
August 28	120
September 5	68
September 12	130
September 18	120
September 25	110
October 2	160
October 16	110
November 10	51
November 14	160
November 27	73
December 5	79
December 18	750


ROSS ISLAND THOROUGH FARE
MYA
1500
1350
1200
1050
900
750
600
450
300
150
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER

ROSS ISLAND THOROUGHFARE - Volsella

Date Taken 1978	Toxicity in Micrograms
January 3	1100
January 16	1100
January 23	860
January 30	1000
February 13	1000
February 27	810
March 13	620
April 3	950
April 10	630
April 16	430
April 24	560
May 1	830
May 8	520
May 15	720
May 23	580
May 29	630
June 5	530
June 12	380
June 19	450
June 26	380
July 4	120
July 17	810
July 24	2500
July 31	3200
August 8	1000
August 14	1200
August 21	900
August 28	820
September 5	410
September 12	510
September 18	700
September 25	1000
October 2	240
October 16	300
November 10	140
November 14	270
November 27	160
December 5	220
December 18	110


Ross Island Thoroughfare
VOLSELIA
3000
2700
2400
2100
1800
1500
12 00
900
600
300
1200
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

P A R T III (A)

CENTRAL NOVA SCOTIA

RECORDS ARRANGED BY AREAS AND SPECIES

ECONOMY - Mya

Date Taken 1978	Toxicity in Micrograms
July 5	<30

FIVE ISLANDS - Mya

Date Taken 1978	Toxicity in Micrograms
June 5	<30
June 13	<30
June 13	<30
June 17	<30
June 17	<30
June 20	<30
September 26	<30

KERR'S BROOK - Mya

Date Taken 1978	Toxicity in Micrograms
July 5	<30

P A R T III (B)

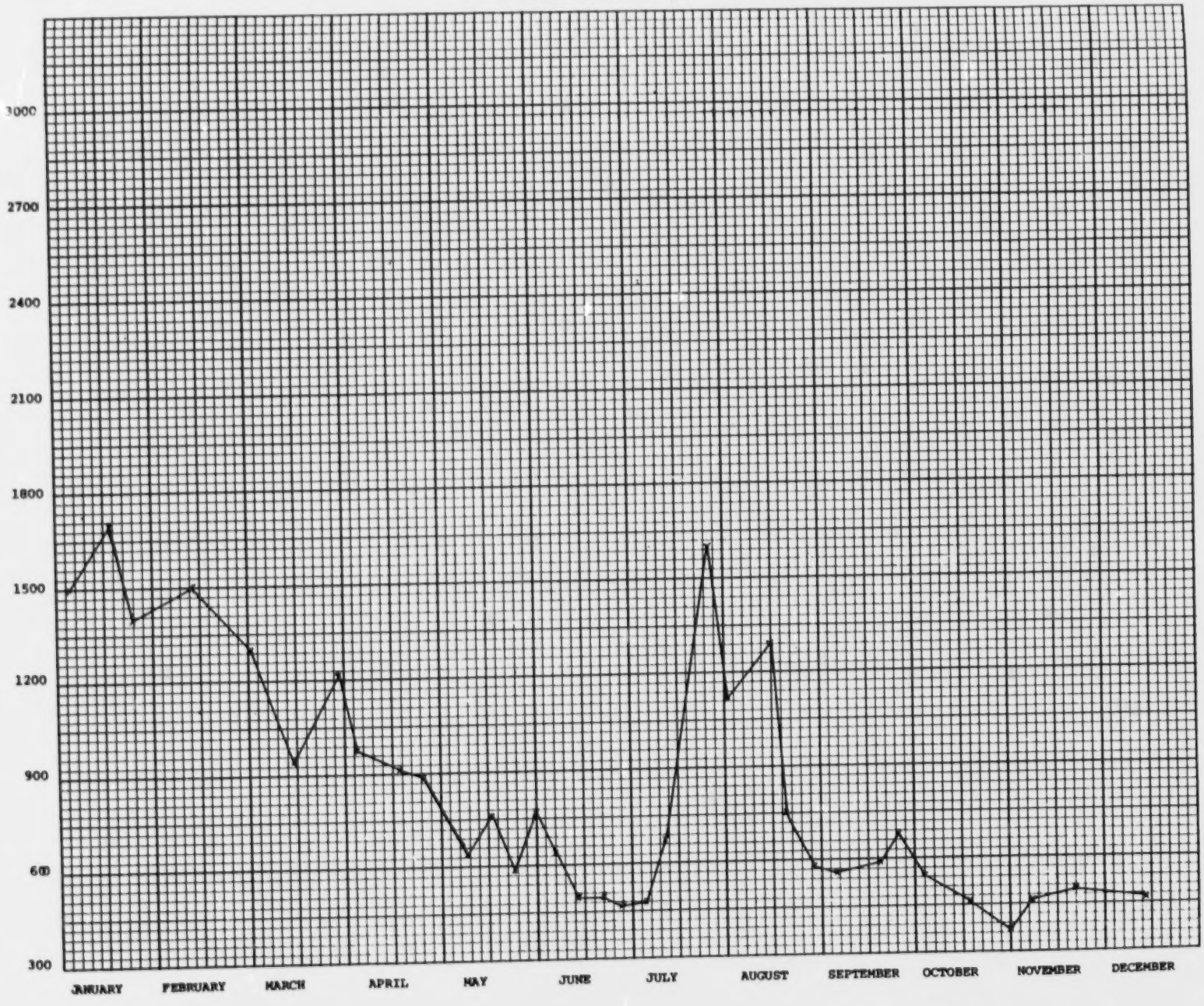
WESTERN NOVA SCOTIA

RECORDS ARRANGED BY AREAS AND SPECIES

CENTREVILLE - Volsella

Date Taken 1978	Toxicity in Micrograms
January 4	1200
January 17	1400
January 24	1100
February 13	1200
March 1	1000
March 14	650
March 29	920
April 4	680
April 17	620
April 25	590
May 2	500
May 8	34
May 16	460
May 23	290
May 30	470
June 6	340
June 13	200
June 21	200
June 27	170
July 4	180
July 11	380
July 25	1300
August 1	820
August 15	990
August 22	450
August 28	280
September 5	260
September 19	290
September 25	380
October 3	250
October 17	160
October 30	64
November 7	160
November 21	200
December 13	170

CENTREVILLE - Volsella



JOGGINS - Mya

Date Taken 1978	Toxicity in Micrograms
April 5	<30
April 17	33
April 18	30
April 19	35
April 25	30
April 27	35
May 16	55
May 19	34
May 23	<30
May 26	42
May 30	98
June 6	31
June 6	<30
June 6	<30
June 6	37
June 6	34
June 6	39
June 8	<30
June 13	<30
June 15	<30
June 20	<30
June 22	<30
June 27	<30
June 29	<30
July 4	<30
July 6	<30
July 11	34
July 13	71
July 18	290
July 20	140
July 25	410
July 27	340
August 1	96
August 3	75
August 8	57
August 10	39
August 15	31
August 22	36
August 29	<30
September 5	<30
September 12	<30
September 19	<30
September 26	<30
October 3	<30
October 10	<30
October 17	<30
October 24	<30
October 31	<30
November 7	30
November 15	<30
November 21	<30

PORT WADE - Mya

Date Taken 1978	Toxicity in Micrograms
April 27	<30
May 26	<30
June 6	<30
June 13	<30
June 20	<30
June 27	<30
July 4	<30
July 11	<30
July 18	<30
July 25	30
July 27	<30
August 1	<30
August 3	<30
August 8	<30
August 10	<30
August 15	<30
August 17	<30
August 22	<30
August 29	<30
September 9	<30
September 12	<30
September 19	<30
September 26	<30
October 3	<30
October 17	<30
October 24	<30

SMITH COVE - Mya

Date Taken 1978	Toxicity in Micrograms
June 27	<30
June 29	<30
July 4	<30
July 6	<30
July 11	30
July 13	56
July 18	270
July 20	340
July 25	230
July 27	290
August 1	120
August 3	130
August 8	41
August 10	34
August 15	<30
August 22	<30

DEEP BROOK - Mya

Date Taken 1978	Toxicity in Micrograms
April 27	<30
May 2	<30
May 9	<30
May 16	<30
May 23	36
May 26	<30
May 30	34
June 6	<30
June 8	<30
June 13	<30
June 15	<30
June 20	<30
June 22	<30
June 27	<30
June 29	<30
July 4	<30
July 6	<30
July 11	<30
July 13	80
July 18	110
July 19	120
July 20	110
July 21	120
July 24	240
July 25	180
July 26	150
July 27	130
July 31	55
August 1	80
August 2	83
August 3	65
August 7	41
August 8	34
August 9	37
August 10	33
August 15	<30
August 22	<30

DIGBY - Mya

Date Taken 1978	Toxicity in Micrograms
August 16	<30
August 15	<30

CLEMENTSPORT - Mya

Date Taken 1978	Toxicity in Micrograms
April 27	<30
June 6	<30
June 13	<30
June 20	<30
June 27	<30
July 1	<30
July 11	<30
July 18	<30
July 25	30
July 27	<30
August 1	<30
August 3	<30
August 8	<30
August 10	<30
August 15	<30
August 22	31
August 29	<30
September 5	<30
September 12	<30
September 19	<30
September 26	<30
October 3	<30
October 10	<30
October 17	<30
October 24	<30

ANNAPOLIS BASIN - Mya

Date Taken 1978	Toxicity in Micrograms
September 20	<30
September 20	<30

BELLIVEAU COVE - Mya

Date Taken 1978	Toxicity in Micrograms
June 6	<30

UPPER CLEMENTS - Mya

Date Taken 1978	Toxicity in Micrograms
April 27	<30
June 6	<30
June 13	<30
June 20	<30
June 27	<30
July 4	<30
July 11	<30
July 18	<30
July 27	<30
August 1	<30
August 3	<30
August 8	<30
August 10	<30
August 15	<30
August 22	<30
August 29	<30
September 5	<30
September 12	<30
September 19	<30
September 26	<30
October 3	<30
October 10	<30
October 17	<30
October 24	<30

METEGHAN - Mya

Date Taken 1978	Toxicity in Micrograms
August 3	<30

METEGHAN - Mytilus

Date Taken 1978	Toxicity in Micrograms
August 3	<30
September 19	<30

MARGARETSVILLE - Mytilus

Date Taken 1978	Toxicity in Micrograms
April 27	32
June 8	<30
June 13	<30
June 20	<30
June 27	<30
July 5	<30
July 11	<30
July 18	<30
July 25	1400
August 1	540
August 8	200
August 15	50
August 22	43
August 29	<30
September 12	<30
September 19	<30
September 26	<30
October 3	<30

P A R T IV (A)

SPECIAL SAMPLES FOR SURVEILLANCE

AND INVESTIGATION

BLACK'S HARBOUR, N.B.

BLACK'S HARBOUR
New Brunswick

Mascarene - Scallop Gonads

Date Taken 1978	Toxicity in Micrograms
January 23	180
February 20	130
March 28	260
April 24	75
May 16	50
June 19	70
July 26	800
August 21	170
September 25	70
October 23	57
December 18	53

Mascarene - Scallop Livers

Date Taken 1978	Toxicity in Micrograms
January 23	7,100
February 20	10,000
March 28	22,000
April 24	4,000
May 16	1,500
June 19	2,800
July 26	14,000
August 21	17,000
September 25	10,000
October 23	11,000
December 18	3,360

Mascarene - Scallop Gills

Date Taken 1978	Toxicity in Micrograms
January 23	48
February 20	<34
March 28	33
April 24	30
May 16	<30
June 19	<30
July 26	470
August 21	<30
September 25	<30
October 23	<30
December 18	<30

Mascarene - Scallop Rims

Date Taken 1978	Toxicity in Micrograms
January 23	4,600
February 20	4,200
March 28	3,200
April 24	1,800
May 16	1,500
June 19	1,200
July 26	3,000
August 21	2,100
September 25	3,000
October 23	2,300
December 18	1,580

Mascarene - Scallop Muscle

Date Taken 1978	Toxicity in Micrograms
January 23	120
February 20	<34
March 28	<30
April 24	<30
May 16	<30
June 19	<30
July 26	120
August 21	30
September 25	<30
October 23	<30
December 18	<30

Bay of Fundy - Scallop Gonads

Date Taken 1978	Toxicity in Micrograms
December 12/77	640
March 29/78	800

Bay of Fundy - Scallop Livers

Date Taken 1978	Toxicity in Micrograms
December 3/77	53,000
March 29/78	99,000

Bay of Fundy - Scallop Gills

Date Taken 1978	Toxicity in Micrograms
November 28/77	210
March 29/78	200

Bay of Fundy - Scallop Rims

Date Taken 1978	Toxicity in Micrograms
December 3/77	3,200
March 29/78	1,600

Magaguadavic River Basin - Mya

Date Taken 1978	Toxicity in Micrograms
June 21	<30
July 6	<30
August 10	<30
August 10	<30
August 11	<30
August 12	<30
August 13	<30
August 14	<30
August 24	<30
September 8	<30
September 10	<30
September 11	<30
September 12	<30
September 16	<30
September 17	<30
September 18	<30
September 19	<30
September 21	<30
September 22	<30
September 23	<30
September 25	<30
September 26	<30

Bay of Fundy - Scallop Muscle

Date Taken 1978	Toxicity in Micrograms
December 3/77	<30
March 29/78	<30

Johnson's Cove - Mya

Date Taken 1978	Toxicity in Micrograms
October 10	<30

Fox Cove - Mya

Date Taken 1978	Toxicity in Micrograms
July 5	58

Harbour de Leoutre - Mya

Date Taken 1978	Toxicity in Micrograms
July 5	<30

Bar Weir - Mya

Date Taken 1978	Toxicity in Micrograms
July 16	140

Galley's Beach - Mytilus

Date Taken 1978	Toxicity in Micrograms
August 8	1500

Lepreau Basin - Mya

Date Taken 1978	Toxicity in Micrograms
December 28	114

Ross Island Thoroughfare - Mya

Station # 1

Date Taken 1978	Toxicity in Micrograms
November 14	46
November 20	41
November 21	57
December 5	32

Station # 2

Date Taken 1978	Toxicity in Micrograms
November 14	37
November 20	37
November 27	32
December 5	45
December 18	<30

Ross Island Thoroughfare - Mya

Station # 3

Date Taken 1978	Toxicity in Micrograms
November 14	30
November 20	<30
November 27	<30
December 5	<30
December 18	<30

Station # 4

Date Taken 1978	Toxicity in Micrograms
November 14	73
November 20	240
November 27	230
December 5	140
December 18	990

FISHERIES RESEARCH BOARD

ST. ANDREWS
New Brunswick

Crab

Date Taken 1978	Toxicity in Micrograms
April 3	<30

Lobster Tail

Date Taken 1978	Toxicity in Micrograms
April 3	<30

Lobster Ovary

Date Taken 1978	Toxicity in Micrograms
April 3	<30

Lobster Gut

Date Taken 1978	Toxicity in Micrograms
April 3	<30

Neptunus

Date Taken 1978	Toxicity in Micrograms
May 1	880

Fryes Island Ledges - Mya

Date Taken 1978	Toxicity in Micrograms
July 16	290

P A R T IV (B)

SPECIAL SAMPLES FOR SURVEILLANCE

AND INVESTIGATION

HALIFAX, N.S.

HALIFAX, N. S.

GEORGE'S BANK

Scallop Rims

Date Taken 1978	Toxicity in Micrograms
January 27	<34
March 2	<34
April 21	<30

Gills

Date Taken 1978	Toxicity in Micrograms
January 27	<34
March 2	<34
April 21	<30

Gonads

Date Taken 1978	Toxicity in Micrograms
January 27	<34
March 2	<34
April 21	<30

Liver

Date Taken 1978	Toxicity in Micrograms
January 27	<34
March 2	<34
April 21	<30

Meats

Date Taken 1978	Toxicity in Micrograms
January 27	<34
March 2	<34
April 21	<30

HALIFAX, N.S.

Path. Lab.

Breaded Clams

Date Taken 1978	Toxicity in Micrograms
May	<30

MARDEN, N.S.

Volsella

Date Taken 1978	Toxicity in Micrograms
June 18	<30

MARDEN, N.S.

Canned Baby Clams

Date Taken 1978	Toxicity in Micrograms
August 18	<30

P A R T IV (C)

SPECIAL SAMPLES FOR SURVEILLANCE

AND INVESTIGATION

YARMOUTH, N.S.

YARMOUTH
Nova Scotia

BAY OF FUNDY - P. Magellanicus

Muscle

Date Taken 1978	Toxicity in Micrograms
February 12	<34
March 29	36
April 17	30
April 26	<30
April 26	33
April 26	47
May 4	<30
June 7	32
July 26	140
August 1	38
August 1	30
August 16	<30
August 16	<30
August 31	<30
October 2	<30

Gill

Date Taken 1978	Toxicity in Micrograms
February 12	530
March 29	190
April 17	64
May 4	56
June 7	48
June 26	<30
July 26	440
August 31	33

Gonad

Date Taken 1978	Toxicity in Micrograms
February 12	740
March 29	900
May 4	300
June 7	150
June 26	43
August 31	49

YARMOUTH
Nova Scotia

BAY OF FUNDY - P. Magellanicus

Rim

Date Taken 1978	Toxicity in Micrograms
February 12	5,800
March 29	3,900
April 17	5,900
May 4	1,620
June 7	4,600
June 26	2,500
July 26	2,200
August 31	1,400

Liver

Date Taken 1978	Toxicity in Micrograms
February 12	110,000
March 29	150,000
April 17	45,000
April 26	1,100
May 4	15,500
June 7	14,000
June 26	8,800
August 31	6,000

Stomach

Date Taken 1978	Toxicity in Micrograms
July 26	32,000

BAY OF FUNDY - P, Magellanicus

Date Taken 1978	Species	Toxicity in Micrograms
October 2	Gill	<30
October 2	Rim	2,000
October 2	Liver	15,000

BAY OF FUNDY - Volsella

Date Taken 1978	Toxicity in Micrograms
April 26	3000

BAY OF FUNDY - Placopecten

Date Taken 1978	Species	Toxicity in Micrograms
June 26	Muscle	<30

BAY OF FUNDY - Whelk

Date Taken 1978	Species	Toxicity in Micrograms
June 21	Meat	<30

ANNAPOLIS BASIN

JOGGINS - L. Littorea

Date Taken 1978	Toxicity in Micrograms
May 29	<30

YARMOUTH
Nova Scotia

ANNAPOLIS BASIN - P. Magellanicus

Muscle

Date Taken 1978	Toxicity in Micrograms
January 17	<34
December 7	<30

Gills

Date Taken 1978	Toxicity in Micrograms
January 17	79
December 7	40

Gonads

Date Taken 1978	Toxicity in Micrograms
January 17	450
December 7	240

Rims

Date Taken 1978	Toxicity in Micrograms
January 17	4800
December 7	4260

Liver

Date Taken 1978	Toxicity in Micrograms
January 17	54,000
December 7	35,500

GEORGE'S BANK - P. Magellanicus

Muscle

Date Taken 1978	Toxicity in Micrograms
April 5	<30
September 19	<30

GEORGE'S BANK - P. Magellanicus

Gills

Date Taken 1978	Toxicity in Micrograms
April 5	<30
September 19	<30

Gonads

Date Taken 1978	Toxicity in Micrograms
April 5	<30
September 19	<30

Rims

Date Taken 1978	Toxicity in Micrograms
April 5	<30
September 19	110

Liver

Date Taken 1978	Toxicity in Micrograms
April 5	<30
September 19	200

CLAM FLATS ISLAND - Mya

Date Taken 1978	Toxicity in Micrograms
January 24	<34

GOOSEBERRY ISLAND - Mya

Date Taken 1978	Toxicity in Micrograms
January 24	<34

P A R T V

COMMERCIAL SAMPLES

BLACK'S HARBOUR, N.B.

BLACK'S HARBOUR, N.B.

CHESTER MURRAY
Saint John, N.B.

IMPORT

Sliced Clams

Date Taken 1978	Toxicity in Micrograms
January 19	<34
November 6	<30

CHAMCOOK SEAFOODS LIMITED
Chamcook, N.B.

IMPORT

Mya (Clam Meats)

Date Taken 1978	Toxicity in Micrograms
April 17	<30

ALAN FISHERIES LIMITED
Digby, N.S.

Mya (Clam Meats)

Date Taken 1978	Toxicity in Micrograms
June 19	<30

OSSIE'S LUNCH
Bethel, N.B.

LOCAL

Mya (Clam Meats)

Date Taken 1978	Toxicity in Micrograms
April 24	<30
April 24	<30

EVERETT MITCHELL
Back Bay, N.B.

LOCAL

Mya (Shellstock)

Date Taken 1978	Toxicity in Micrograms
September 11	41
September 12	62
September 18	87
September 26	100
October 17	190
October 31	33

HAZEN LOMAX
Lepreau, N.B.

LOCAL

Mya (Clam Meats)

Date Taken 1978	Toxicity in Micrograms
August 24	<30
October 17	<30

CHAMCOOK SEAFOODS LIMITED
Chamcook, N.B.

LOCAL

Mya (Clam Meats)

Date Taken 1978	Toxicity in Micrograms
February 2	<34
February 9	<34
February 16	37
March 20	<34
April 11	<30
April 17	30
April 24	<30
May 9	30
May 17	32
May 23	52
June 2	60
June 17	150
June 21	70
June 27	<30
June 27	59
July 10	30
July 17	<30
July 24	<30
August 1	<30
August 8	<30
August 15	<30
August 22	<30
August 24	32
August 28	<30
August 31	<30
September 5	<30
September 12	30
September 19	<30
September 19	<30
October 7	<30
October 25	<30
October 26	<30

P A R T V

COMMERCIAL SAMPLES

SHEDIAC, N.B.

COMMERCIAL SAMPLES

Shediac
New Brunswick

DOMESTIC

Date Taken 1978	Species	Locality	Toxicity in Micrograms
May 2	Scallop Meat	Cape Bimet, N.B.	<30
May 2	Scallop Roe	Cape Bimet, N.B.	<30
May 10	Scallop Meat	Cape Bimet, N.B.	<30
May 10	Scallop Roe	Cape Bimet, N.B.	<30
May 17	Scallops	Cocagne, N.B.	<30
May 17	Scallop Roe	Cocagne, N.B.	<30
	Mya	Buctouche, N.B.	<34
April 17	Mya	Buctouche, N.B.	<30
April 24	Mya	Buctouche, N.B.	<30
	Mya	Buctouche, N.B.	<30

IMPORTS

Date Taken 1978	Species	Locality	Toxicity in Micrograms
January 31	Mussels	Buctouche, N.B.	<34
	Mussels	Buctouche, N.B.	<34
	Mussels	Buctouche, N.B.	<34
March 7	Mya	Buctouche, N.B.	<34
April 3	Mya	Buctouche, N.B.	<34
April 11	Mya	Buctouche, N.B.	<30
May 2	Mya	Buctouche, N.B.	<30
July 31	Mya	Buctouche, N.B.	<30
August 22	Mya	Buctouche, N.B.	<30
November 15	Mya	Buctouche, N.B.	<30

P A R T V

COMMERCIAL SAMPLES

HALIFAX, N.S.

COMMERCIAL SAMPLES

HALIFAX, N.S.

DOMESTIC

National Seafoods Products
Highliner Division

Whelks

Date Taken 1978	Toxicity in Micrograms
January 30	<34

CORMIER'S FIVE ISLANDS
Halifax, N.S.

Mya (Clams)

Date Taken 1978	Toxicity in Micrograms
June 26	<30
July 10	<30

CORMIER'S FIVE ISLANDS
Halifax, N.S.

Mya

Date Taken 1978	Toxicity in Micrograms
July 24	<30
August 23	<30
August 23	<30
August 28	<30
September 5	<30
September 11	<30
September	<30
October 3	<30
October 12	<30
October 23	<30
November 14	<30

P A R T V

COMMERCIAL SAMPLES

YARMOUTH, N.S.

YARMOUTH
Nova Scotia

LOCAL

Snow Bros. Ltd.

Date Taken 1978	Species	Locality	Toxicity in Micrograms
August 23	Mya	Digby, Nova Scotia	<30
September 13	Mya	Digby, Nova Scotia	<30
September 27	Mya	Digby, Nova Scotia	<30
October 3	Mya	Digby, Nova Scotia	<30
October 12	Mya	Digby, Nova Scotia	31

Alan Fisheries Ltd.
Digby, N.S.

Mya

Date Taken 1978	Toxicity in Micrograms
August 23	<30
September 13	48
September 27	33
October 12	<30
October 3	<30
October 18	32

Alan Fisheries Ltd.
Digby, N.S.

IMPORTS

Mya

Date Taken 1978	Toxicity in Micrograms
April 5	<30

P A R T VI

PARALYTIC SHELLFISH POISONINGS

CASE HISTORY - PARALYTIC SHELLFISH POISONING

Name Mr. O.S. Time of Injestion of Shellfish 1600 hrs. 23/Apr.

Address St. George, N.B. Time of Onset of Illness 1830 hrs. 23/Apr./78

Sex Male Age 20 Duration of Illness 1200 hrs. + 24/Apr./78 (Hours or Days)

Height 6 ft. Weight 155 lbs.

Source of Shellfish Ossies Restaurant (Chamcook Seafoods Ltd.) Kind of Shellfish Eaten Mya

Number of Shellfish Eaten 15-20 Clams Size of Shellfish ~~fairly large~~

Preparation of Shellfish (raw, steamed, etc.) Deep fryed in batter

Toxicity of Raw Shellfish available -<30 mg/100 Estimated Dosage unknown

Other Food or Drink Taken Chocolate milk shake 1 bite cheeseburger

Time Other Food Or Drink Taken above eaten at same time - 1600 hrs.

General health Good Date Illness Reported 1200 hrs., 24/April/78

To Whom Reported Dr. H. Dorado H.L. Boyd How? (Interview, etc.) Phone and Personal Interview

Work Interruption Mr. S. had to leave the mill shortly after commencing work at 1900 hrs.

SYMPTOMS (Underline symptoms observed and sequence)

Numbness of: Lips; Face

Difficulty with: Standing up At hospital 19:45 hr; Sitting down NO =

Difficulty with Speech

Difficulty with Breathing At 1910 hrs.

Numbness of: Fingers 1915 hrs.; Hands 1915 hrs.; Toes 1915 hrs.

Difficulty with Holding Head Erect

Nausea 1830 hrs. at home and 1910 hrs. at Mill

Dizziness or Giddiness

Vomiting 1830 hrs. at home and 1910 hrs. at Mill

Numbness of: Arms at 1915 hrs; Legs at 1915 hrs.

Headache 700 hrs - 24 April

Backache

Vision Affected

Weakness YES

Other symptoms Stiffness of neck, 700 hrs. 24th April

Other Information or Remarks: Presiding physican Dr. Hose Dorado-neurotoxin.

Mr. S. had a nap at his home shortly after eating and was awakened at 1830 hours.

Treatment: 2 quarts I.V. 5% Dextrose; 1 teaspoon/quart Baking Soda; 50 mg Gravol Interveinously. Admitted to hospital at 1945 hrs, 23 April, 1978, transported from mill by brother.

April 24, 1978 — DATE

H.L. Boyd — SIGNATURE

SIGNATURE

CASE HISTORY - PARALYTIC SHELLFISH POISONING

Name Mrs. J. R. B.

Address 22 Kernwood Drive, Lynn, Mass. U.S.A.=

Sex Female Age 31

Height 5' 4'' Weight 135

Time of Injestion of Shellfish 2100Hrs. 27/7/78

Time of Onset of Illness 900 Hrs. 28/7/78

Duration of Illness 1200 Hrs., 29/7/78 (Hours or Days)

Source of Shellfish Galley's Beach, Head Harbour, Campobello Kind of Shellfish Eaten Mytilus

Number of Shellfish Eaten 25-30 Size of Shellfish 1½" average

Preparation of Shellfish (raw, steamed, etc.) Steamed, 10-15 minutes

Toxicity of ~~Raw~~ Cooked Shellfish 4970 ug/100 gms. Estimated Dosage 1200 ug

Other Food or Drink Taken 1930 hrs., 27th July,-Hamburger rolls, coffee

Time Other Food Or Drink Taken 2100 hrs. 2 glasses gingerale, coffee, Mussels

General Health Good Date Illness Reported 28 July, 1978

To Whom Reported Health Center Lubec How? (Interview, etc.) By Phone -H.L. Boyd

Work Interruption Yes - Hospitalized - 1200 hrs. Friday to 1200 hrs., Saturday

SYMPTOMS (Underline symptoms observed and sequence)

Numbness of Lips (Immediately)

Face (Immediately)

Difficulty with Speech

Fingers

Numbness of Toes

Dizziness or Giddiness - 900 Hrs. Friday

Arms

Numbness of Legs

Vision Affected

Other symptoms

Difficulty with Standing up

Sitting down

Difficulty with Breathing

Difficulty with Holding Head Erect

Nausea

Vomiting

Headache 1600 Hrs. Friday at Hospital

Backache

Weakness

Other Information or Remarks: Friday, Hospitalized.

Treatment: - To bed - two bottles fluids by I.V.; two Asprins, very little water given,

No posting of areas.

August 2/78
DATE

H. L. Boyd
SIGNATURE

CASE HISTORY - PARALYTIC SHELLFISH POISONING

Name Mr. J. W. B.

Address 22 Kernwood Drive, Lynn, Mass., U.S.A.

Sex Male Age 37

Height 5' 9" Weight 180 lbs.

Time of Injestion of Shellfish 2100 hrs. 27/7/78

Time of Onset of Illness 900 hrs. 28/7/78

Duration of Illness 1800 hrs. 29/7/78 (Hours or Days)

Source of Shellfish Galley's Beach, Head Harbour, Campobello Kind of Shellfish Eaten Mytilus

Number of Shellfish Eaten 50-60 Size of Shellfish 1½" average

Preparation of Shellfish (raw, steamed, etc.) Steamed 10-15 minutes

Toxicity of ~~RAW~~ Cooked Shellfish 4970 ug/100 gms. Estimated Dosage 2500 ug

Other Food or Drink Taken 1930 hrs. 27th July - 4 hamburgers

Time Other Food Or Drink Taken 2100 hrs. -two gingerale, 1 coffee, Mussels

General Health Good Date Illness Reported 28 July, Friday

To Whom Reported Health Centre, Lubec How? (Interview, etc.) By phone - H. L. Boyd

Work Interruption Yes - Hospitalized 1200 hrs. Friday to 1200 hrs Saturday

Symptoms (Underline symptoms observed and sequence)

Numbness of Lips - 900 hrs. Friday
Face - 900 hrs. Friday

Difficulty with Speech

Numbness of Fingers
Toes

Dizziness or Giddiness

Numbness of Arms
Legs

Vision Affected

Difficulty with Standing up
Sitting down

Difficulty with Breathing

Difficulty with Holding Head Erect

Nausea

Vomiting

Headache

Backache

Weakness

Other symptoms Sleepy

Other Information or Remarks: Symptoms were present on awakening Friday, Hospitalized on Friday.

Treatment: Intermuscular shot for upset stomach. I.V. -two bottles fluid.

August 2/78
DATE

H.L. Boyd
SIGNATURE

CASE HISTORY - PARALYTIC SHELLFISH POISONING

Name Mrs. E. E. B.

Address 63 Pine Grove Avenue, Lynn, Mass., U.S.A.

Sex Female Age 72

Height 5' 2" Weight 120 lbs.

Source of Shellfish Galley's Beach, Head Harbour, Campobello

Number of Shellfish Eaten 5-6 Periwinkles Small Bowl Mussels

Preparation of Shellfish (raw, steamed, etc.) Steamed 10 - 15 minutes

Toxicity of ~~Raw~~ Cooked Shellfish 4970 ug/100 gms

Other Food or Drink Taken 1930 hrs., 1 Hamburger, potato salad

Time Other Food Or Drink Taken 2100 hrs., 1 glass gingerale, Mussels

General Health High Blood Pressure

To Whom Reported Health Centre, Lubec

Work Interruption Yes, Hospitalized 1200 hours, Friday to 1200 hours, Saturday

Time of Injestion of Shellfish 2100 hrs. 27/7/78

Time of Onset of Illness 700 hrs., 28/7/78

Duration of Illness 2nd August, still weak and dizzy
(Hours or Days)

Kind of Shellfish Eaten Mussels (Mytilus) - Small bowl
Periwinkles (Littorina) 5 - 6

Size of Shellfish Mussels (Mytilus) - 1½" average
Periwinkles (Littorina) - small

Estimated Dosage ? ug

Date Illness Reported 28 July, 1978 (Friday)

How? (Interview, etc.) By phone, H. L. Boyd

SYMPTOMS (Underline symptoms observed and sequence)

Numbness of Lips - Swollen, skin peeled off
Face
Fingers
Toes

Difficulty with Speech

Dizziness or Giddiness

Numbness of Arms
Legs

Vision Affected

Difficulty with Standing up
Sitting down

Difficulty with Breathing

Difficulty with Holding head Erect

Nausea

Vomiting

Headache

Backache

Weakness

Other symptoms Coughing, Floating Sensation

Other Information or Remarks: On morning of 28th July, awoke and could not move hands. Mrs. B. thought she had a shock. All symptoms were present on awakening on Friday. Hospitalized on same day. I.V. - quantity unknown, intensive care. Medication for pain in back (Codine and Tylenol). One pill on Tuesday and one pill on Wednesday. High Blood Pressure one pill/day containing Malanta and Tabserapes

Comments: First and last time of mussel consumption.

August 2, 1978 — DATE

Hazen L. Boyd — SIGNATURE